

NOZZLE COUPLING

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TOP SECRET

1 NOZZLE COUPLING

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4 Field of the Invention

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6 This invention relates to misting systems and to nozzle
7 couplings for use with misting systems.

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9 Background of the Invention

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11 Misting systems are popular in hot and dry climates
12 where the rapid evaporation of mist is capable of quickly
13 and efficiently cooling outdoor areas, such as private and
14 commercial patios, outdoor seating areas, outdoor
15 restaurants, etc. A problem with existing misting is that
16 it is difficult to fix and alter the direction of the mist
17 spray.

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19 Thus, there is a need for a new and improved misting
20 system and, more particularly, for a new and improved nozzle
21 coupling for use with a misting system that is inexpensive,
22 easy to construct and maintain, and that is capable of
23 directing mist in predetermined directions.

Summary of the Invention

Briefly stated, disclosed is a nozzle coupling including a connector having opposing ends and a channel bound by the connector that is capable of being coupled in fluid communication to a fluid source. A nozzle is attached to the connector between the opposing ends in fluid communication with the channel to receive fluid from the channel and spray it outwardly from the channel. Adjacent exterior facets of the connector extend longitudinally of the connector from one of the opposing ends to the other of the opposing ends. The facets define different planes. The nozzle is located at one of the facets, and the remaining facets are considered disposed apart from the nozzle. The facets each provide seating points that are each capable of being borne against a surface for causing the nozzle to direct mist in a predetermined direction. The facets are flat, and addressing one of them against a surface fixes the connector in place against, and inhibits the connector from rotating against, the surface against which it bears. This holds true for each of the facets. An engagement assembly attaches the nozzle to the connector that includes an engagement element carried by the nozzle and a detachably engaged complementary engagement element carried by the connector. Preferably, the engagement element is a threaded

1 element and the complementary engagement element is a
2 complement threaded element, and this can be reversed. The
3 channel extending through the connector is characterized by
4 a passage that communicates with opposing counterbores
5 disposed at the opposing ends that are each capable of
6 connector a fluid conducting conduit.

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BRIEF DESCRIPTION OF THE DRAWINGS

Referring to the drawings:

FIG. 1 is a side elevation of a nozzle coupling, in accordance with the principle of the invention, the nozzle coupling including a connector having ends coupled in fluid communication to fluid conducting conduits and an attached nozzle for receiving fluid from the connector and spraying it outwardly therefrom;

FIG. 2 is an exploded isometric view of the nozzle coupling of FIG. 1;

FIG. 3 is an end elevation of the nozzle coupling of FIG. 1;

FIG. 4 is a sectional view of the connector taken along line 4-4 of FIG. 1 with the nozzle shown detached therefrom;

FIG. 5 is a view of the nozzle coupling of FIG. 1 shown as it would appear incorporated into a misting system; and

FIG. 6 is an isometric view of the connector of FIG. 1 and a wrench engaging the connector.

1 DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

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3 Turning now to the drawings, in which like reference
4 characters indicate corresponding elements throughout the
5 several views, attention is first directed to FIG. 1 in
6 which is seen a side elevation of a nozzle coupling,
7 embodying the principle of the instant invention, generally
8 indicated by the reference character 10 and including a
9 connector 11 and an attached nozzle 12. Connector 11 is
10 fashioned from plastic, brass, stainless steel or aluminum
11 with brass being preferred and other materials can be used
12 if desired. Connector 11 is integrally fashioned by
13 machining stock or by molding with the former being
14 preferred. Connector 11 can also be assembled from two or
15 more prefabricated parts with welding, adhesive, etc.

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17 Turning to FIG. 4, which is a sectional view taken
18 along line 4-4 of FIG. 1, connector 11 is an elongate
19 tubular body 20 having opposing open ends 21,22. Body 20
20 bounds a channel 23, which extends longitudinally
21 therethrough from end 21 to end 22. In this embodiment,
22 channel 23 is characterized by an intermediate passage 24
23 that communicates with opposing counterbores 25,26.
24 Counterbore 25 is capable of receiving an end 30 of a fluid
25 conducting conduit 31 and counterbore 26 is capable of

1 receiving an end 32 of a fluid conducting conduit 33. The
2 outer diameters of ends 30,32 of conduits 31,33 are somewhat
3 smaller than the inner diameters of counterbores 25,26,
4 respectively, which permits counterbores 25,26 to receive
5 ends 30,32, respectively, providing a relatively snug fit.
6 Beads 34,35 of adhesive or solder are applied between ends
7 21,22 and the outer surfaces of conduits 31,32,
8 respectively, providing a substantially fluid-tight seal
9 between ends 21,22 and conduits 31,33. Conduits 31,33 can
10 be attached to connector 11 in fluid communication with
11 channel 24 in other ways, which will readily occur to the
12 skilled artisan.

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14 A threaded bore 40 extends inwardly through body 20 at
15 passage 24 and communicates with passage 24. Further to
16 FIG. 2, nozzle 12 has a threaded end 41 that complements
17 threaded bore 40 and is capable of being threadably received
18 by and removed from threaded bore 40 in a conventional
19 manner. Although threaded features represent a preferred
20 attachment assembly for detachably coupling nozzle 12 to
21 connector 11, snap features, press fitting and other
22 suitable manners of detachable engagement can be employed.
23 Nozzle 12 can also be fixed to connector if desired or
24 adhesively attached. As shown in FIG. 1, nozzle 12 attaches
25 to body 20 between ends 21,22. Nozzle 12 is a conventional

1 misting nozzle that is capable of receiving fluid proximate
2 end 41 from passage 24 and spraying it outwardly from its
3 opposing end in the form of mist. So when attached to body
4 20 as in FIGS. 1 and 3, nozzle 12 is attached to connector
5 11 between ends 21,22 in fluid communication with channel 23
6 (FIG. 4) to receive fluid from channel 23 and spray it
7 outwardly therefrom in the form of mist 45.

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9 Conduits 31,33 are capable of receiving and conducting
10 fluid from a fluid source. The fluid source is typically a
11 water source, and it is intended that conduit 31 is attached
12 to a water source such a garden hose or perhaps a dedicated
13 or permanent water supply line. Conduit 33 can be attached
14 to the fluid source instead of conduit 31 if desired.
15 Conduit 31 is capable of delivering water into passage 24
16 and onward through conduit 33. Although only one nozzle
17 coupling is shown, it is envisioned that a plurality of such
18 nozzle couplings be coupled together in fluid communication
19 with a plurality of conduits or conduit segments upstream
20 and/or downstream of nozzle coupling 10 so as to form a
21 misting system. When such a misting system is charged with
22 pressurized water, it is driven outwardly through the
23 nozzles of the nozzle couplings providing mist. And so when
24 pressurized water passes into passage 24, part of it will be
25 collected by nozzle 12 and sprayed outwardly therefrom in

the form of mist 45, which is denoted in FIGS. 1 and 3. Those of ordinary skill will readily appreciate that nozzle coupling 10 may be incorporated into a misting system having the same such nozzle couplings or different forms of nozzle assemblies.

Referring to FIGS. 2 and 3, body 20 includes an outer surface that is characterized by adjacent exterior facets or faces 50A-50H that extend longitudinally of body 11 from end 21 to end 22. As best represented in FIG. 3, body 20 incorporates eight facets and in cross section is octagonal in shape. Facets 50A-50H define different planes and are substantially equally sized. Less or more such facets can be incorporated with body 20 and even one can be provided if desired consistent with the teachings of the invention. Facets 50A-50H can be differently sized if desired depending on specific needs. As shown in FIG. 2, bore 40 extends into facet 50A and nozzle 12 is disposed at facet 50A when attached to connector 11. Facets 50B-50H are disposed apart from nozzle 12 and defined planes that are each different from each other and from facet 50A.

In a typical installation as shown in FIG. 5, a misting system 60 incorporating nozzle coupling 10 is secured to a supporting surface 61, such as that provided by an elevated

1 rafter 62 of a building structure. There are many ways to
2 secure a misting system to a surface, with attachment
3 brackets and couplings being the most widely used. When
4 such a misting system is attached, nozzle coupling 10 is
5 directed against surface 61. Facets 50B-50H are very
6 important, because they each provide seating points that are
7 each capable of being borne against surface 61. Because
8 facets 50B-50H are flat, addressing one of them against
9 surface 61 fixes nozzle coupling 10 in place against, and
10 inhibits it from rotating against, surface 61 against which
11 it bears. This arrangement causes nozzle coupling 10 to be
12 fixed in place and causes nozzle 12 to be oriented in a
13 fixed direction thus causing a "locating" of nozzle 12. The
14 terms "locating" and to "locate nozzle" in this respect
15 means fixing of nozzle 12 in a predetermined direction by
16 addressing one of facets 50B-50H against a surface. In FIG.
17 5, facet 50E is directed against surface 61. Facet 50E
18 opposes and is substantially parallel to facet 50A.
19 Therefore, with facet 50E directed against surface 61,
20 nozzle 12 points directly away from surface 61 and thus
21 directs its expelled mist directly away from surface 61. In
22 order to fix nozzle in other mist-spraying positions, any
23 one of facets 50B-50D and 50F-50H can be born against
24 surface 61. If system 60 incorporates a plurality of nozzle
25 couplings each of a type like that of nozzle coupling 10,

1 they can each be mounted or otherwise born against a surface
2 commonly for directing mist in the same direction or
3 differently for directing mist in different directions.
4 With regard to FIG. 6, the faceted aspect of connector 20
5 permits it to be engaged with a wrench 70 for turning it.
6 FIG. 6 is further instructive for illustrating bead 34 as it
7 would appear being applied.

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9 The invention has been described above with reference
10 to a preferred embodiment. However, those skilled in the
11 art will recognize that changes and modifications, whether
12 known in the art or novel, may be made to the described
13 embodiment without departing from the nature and scope of
14 the invention, and that positioning of engagement and
15 complementary engagement pairs may be reversed. Accordingly,
16 any such changes and modifications to the embodiment herein
17 chosen for purposes of illustration are intended to be
18 included within the scope of the invention as assessed only
19 by a fair interpretation of the ensuing claims.

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21 Having fully described the invention in such clear and
22 concise terms as to enable those skilled in the art to
23 understand and practice the same, the invention claimed is: